TAMUS 1058

Methods for constructing a general K-step-ahead (single or multi) predictor; methods apply to adaptive and non-adaptive predictor construction. One embodiment of these methods made use of the architecture in US Pat. No. 5,479,571. Implementation of the methods of construction using other architectures (or models) is feasible.

TAMUS 1084

Methods for constructing a general state predictor and state filter; methods are presented for: (1) adaptive, (2) non-adaptive, and (3) hybrid construction. One embodiment of these methods make use of the architecture of US Pat. No. 5,479,571 and methods developed under TAMUS 1058. Implementation of the methods of construction using other architectures (or models) is feasible.

TAMUS 1097

Methods for constructing a general forecasting system and its associated forecasting uncertainty from sparse data sets. Implementation of the methods of construction using any architecture (or model) is feasible.

TAMUS 1059

Methods for construction of general equipment condition assessment (or diagnosis) systems. Also methods for computing the associated diagnosis uncertainty are claimed. Three methods are disclosed: (1) model-based, (2) signal-based, and (3) hybrid (both model-based and signal-based). The embodiment of these methods make use of the architecture in US Pat. No. 5,479,571, and the disclosures TAMUS 1058 and TAMUS 1084. Implementation of the methods of construction using other architectures (or models) is feasible. One such implementation for an AC induction mother is given.

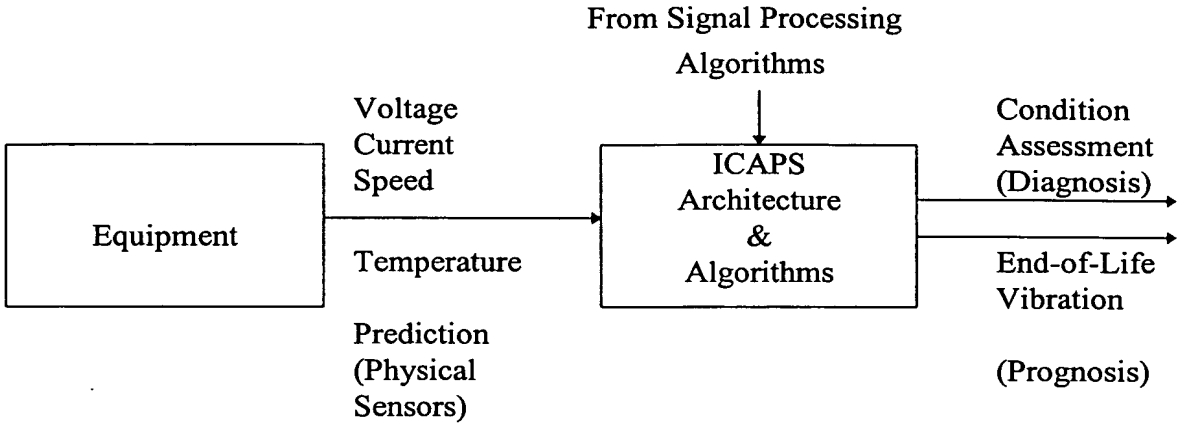
Methods for construction of general equipment end-of-life prediction (prognosis) systems. Also methods for computing the associated prognosis uncertainty are claimed. The embodiment of these methods make use of the architecture in US Pat. No. 5,479,571, and the disclosures TAMUS 1058 and TAMUS 1084. Implementation of the methods of construction using other architectures (or models) is feasible.

TAMUS 1161

A virtual instrument for measuring the condition of equipment in general. An equipment condition instrument displays information regarding present condition of incipient failures, the uncertainty associated with them, equipment efficiency, the cost associated with efficiency degradation, recommended repairs, if any, the associated costs with them, and the cost associated with the down-time needed to perform the repairs. The embodiment of this instrument makes use of the algorithms in disclosure TAMUS 1059. Implementation of the instrument using other algorithms is feasible. One such implementation for an AC induction motor is given.

A virtual instrument for measuring the end-of-life (remaining useful life) of equipment in general. An equipment end-of-life instrument displays information regarding predicted condition of incipient failures, the uncertainty associated with them, anticipated remaining end-of-life and the uncertainty associated with it, predicted equipment efficiency, the cost associated with predicted efficiency degradation, future anticipated repairs, if any, the associated costs with them, and the cost associated with the down-time that will be needed to perform the predicted repairs. The embodiment of this instrument makes use of the algorithms in disclosure TAMUS 1059. Implementation of the instrument using other algorithms is feasible. One such implementation for an AC induction motor is given.

Fig. 1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(Diagnosis)
End-of-Life
Vibration
(Prognosis)

Fig. 2

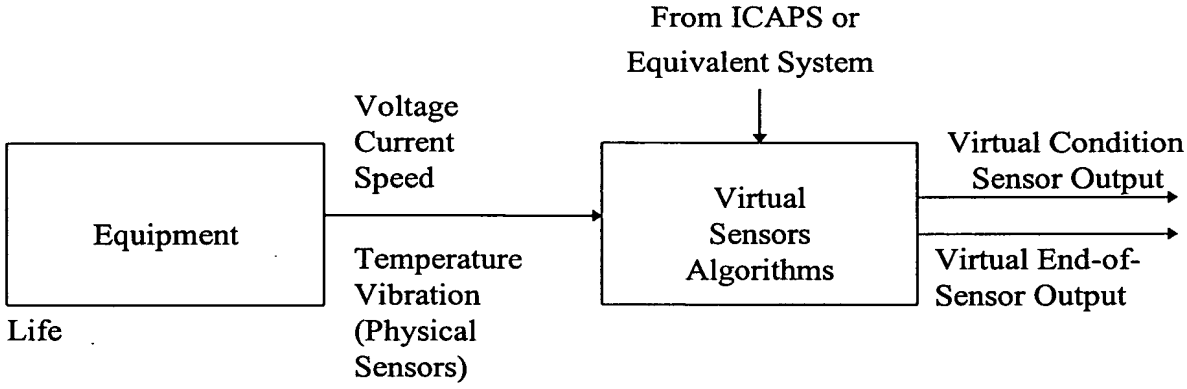
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Fig. 3